

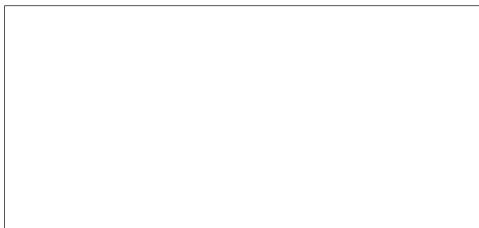
31 January 1956

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## MEMORANDUM FOR THE RECORD

SUBJECT: Status of Hole-Drilling Projects as of 24 January 1956

1. A meeting of the Hole-Drilling Committee was held on 24 January 1956. Those present were:



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The activities of each of the four Divisions represented at the meeting are given below:

TSL

Drilling Plaster: Holes bored through wall panel sections made at Station II ended in chip-outs of varying size on the pointed surfaces when 1 mm steel drills were used. Walls covered with paper did not show holes greater than the diameter of the drill. One problem is that drills wear rapidly in the plaster and complete the penetration as a cone-shaped pierce-instrument. A steady even pressure must be used on the drill.

All carbide drills .040" in diameter (the smallest made commercially) are on order for further trial.

This work is being done under direction of TSS/ED.

Drilling Concrete: Diamond drills cut concrete much more rapidly than carbide-tipped drills. However the diamond drills had to be cooled thoroughly by water, otherwise they burn readily. Also their embedments wore away rapidly in several tests allowing the diamonds to fall out.

Additional drilling rigs and diamond drills are on order for continuation of this work.

Preliminary tests on thermal shock treatment by alternately impinging hot air and dry-ice-chilled solvent on the concrete were unsuccessful. Indications that flame treatment at least up to red heat may be necessary. Torch treatments will be tried.

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TSL (Cont'd)

Several chemicals have been obtained as an aid in establishing shock treatment. Attempts will be made to generate heat in the concrete by reaction between materials such as hydrazine and fuming nitric acid.

This phase of the work is being done in coordination with TSS/CD.

Other work proposed for TSS/TSL at the meeting consists of:

- a. Comparing diamond-tipped with carbide-tipped drills in manually operated hand drills. Purpose to see if the former would be superior to the carbide-tipped drills now used.
- b. Checking the rate of penetration of carbide-tipped drills in hot (red hot) concrete vs the rate through concrete at room temperature.

ED

Drilling Kit. [ ] will supply seven complete drilling kits under a new proposal. Three prototype drilling units will be supplied for our testing and should be delivered to us by the end of February. These kits will contain improved Sears Roebuck drilling equipment, diamond-tipped drills, flexible cable and a small standard motor. The motor will operate on a 110-220 V, 50 cy. The kit will contain a cylinder of air or carbon dioxide for cooling and flushing of the hollow-type drill. Drills will be provided for drilling through 30' of material.

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ED will look into a method of cutting through rocks developed by Linde Products. It is reported that this tool utilizes a fuel consisting of oxygen and kerosene. The drill reportedly will penetrate 30' of Theonite per hour as compared to 2' per hour by the conventional carbide or diamond-tipped drill. The diameter of these holes is 5'.

ED will ask [ ] to investigate the halogen trifluoride method of drilling reported to have been developed by the McCullough Tool Co in conjunction with Pennsylvania Salt Mfg. Co. [ ] will also be asked to investigate the aluminum oxygen method of burning holes.

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[ ] mentioned a new ultrasonic power pack and drill that he had seen advertised in one of the trade journals. He will follow up on this lead.

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ED reported that [ ] had not as yet started actual construction of the test walls. Some delay had been encountered in obtaining a sub-contractor.

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